

Work and Power:

- Work:

- Work is done when a force causes a change in motion of an object.
- Direction of force and direction of motion must be along the same axis

- Equation: $W = \vec{F} \cdot \vec{d}$
 $= Fd \cos \theta$

$$\boxed{W = Fd}$$

- If force and displacement are perpendicular to each other, there is NO work being done.

- Units: Force $\rightarrow N$
displacement $\rightarrow m$

$$N \cdot m = \text{Joule (J)} = \text{kg} \cdot \text{m}^2/\text{s}^2$$

- Power:

- Work divided by the amount of time work is done.

- Equation: $P = \frac{W}{t}$

- Units: Work \rightarrow J

- Time \rightarrow s

- $$\text{J/s} = \text{Watt (W)}$$